**CLINICAL AND PATHOGENETIC SIGNIFICANCE OF HEAT SHOCK PROTEIN IN ALOPECIA AREATA**

|  |  |
| --- | --- |
| **About the author:** | I.M. Serbina |
| **Heading** | ORIGINAL RESEARCHES |
| **Type of article** | Scentific article |
| **Annotation** | Heat shock protein 70 (HSP‑70) performs a variety of functions, serving as a  participant in the pathogenesis of a number of autoimmune diseases. Absence of  unambiguous data on immunopathological processes, search for new markers of  inflammation substantiate.  The objective of the work: to evaluate the content of HSP‑70 in patients with alopecia  areata (АA), depending on the severity, activity and duration of the disease.  Materials and methods. We observed 68 patients with different forms of AA  (32 males and 36 females). The control group consisted of 35 healthy individuals.  The severity and stage of the pathological process were evaluated.  Results. The content of HSP‑70 (ng / ml) was determined in blood serum by the  method of enzyme‑linked immunosorbent assay.The level of HSP‑70 in patients  with AA was significantly increased compared with the data obtained in the control  group. A correlation was found between the content of HSP‑70 and the severity  of dermatosis, when there was an increase in the value of the indicator in all options  of the course of the disease, especially in the severe stage of the disease – 1.9 times  higher than in the control group.HSP‑70 increased by 2.2 times compared with  patients with inactive manifestations of AA. The most pronounced violations of the  investigated indicator were found in patients who had signs of activity and a severe  degree of AA. An increase in HSP‑70 was identified in all periods of the disease,  but the highest level was observed in patients with disease duration of up to 1 year.  It is established that an increase in the secretion of HSP‑70 (η2 = 66.2%) increases  the probability of development of AA.  Conclusions. The revealed violations can create conditions for the development  of autoimmune inflammation and indicate the direct involvement of HSP‑70 in the  mechanisms of AA pathogenesis. |
| **Tags** | alopecia areata, pathogenesis, heat shock protein 70. |
| **Bibliography** | * 1.  Evdonin AL, Medvedeva ND. Vnekletochnyiy belok teplovogo shoka 70 i ego funktsii [Extracellular heat shock protein 70 and its functions]. Tsitologiya. 2009;51(2):130–137. 2.  Ivashkin VT, Drapkina OM. Klinicheskoe znachenie oksida azota i belkov teplovogo shoka [The clinical significance of nitric oxide and heat shock proteins]. 2-e izdanie. M.: GEOTAR Media; 2011.  376 p. 3.  Kabalyik M A. Kliniko-patogeneticheskoe znachenie belkov teplovogo shoka s massoy 70 i 27 kDa pri osteoartrite [Clinical and pathogenetic significance of heat shock proteins with a mass of 70 and 27 kDa in osteoarthritis]. Nauchno-prakticheskaya revmatologiya. 2017;55(2):187–191. 4.  Ponasenko OA, Gankovskaya LV, Svitich OA. Rol belka teplovogo shoka 70 v patogeneze serdechno-sosudistoy patologii [The role of heat shock protein 70 in the pathogenesis of cardiovascular  disease]. Meditsinskaya immunologiya. 2019;21(2):201–208. 5.  Yakovenko LF, Romaschenko OV, Krupskaya IV. Belki teplovogo shoka v diagnostike i prognozirovanii narusheniy reproduktivnoy funktsii u zhenschin [Heat shock proteins in the diagnosis and  prognosis of reproductive disorders in women]. Zdorove zhenschinyi. 2018;7(133):77–83. 6.  Mosenson JA, Eby JM, Hernandez C, Le Poole IC. A central role for inducible heat-shock protein 70 in autoimmune vitiligo. Exp Dermatol. 2013;22(9):566–569. 7.  Olsen E, Hordinsky M, Price V, et al. Alopecia areata investigational assessment guidelinese. Part II. J. Am. Acad. Dermatol. 2004;51:440–447. 8.  Czarnowicki T, He HY, Wen HC, et al. Alopecia areata is characterized by expansion of circulating Th2/Tc2/Th22, within the skin-homing and systemic T-cell populations. Allergy. 2018;73(3):713–723. 9.  Song T, Pavel AB, Wen HC, et al. An integrated model of alopecia areata biomarkers highlights both TH1 and TH2 upregulation. J Allergy Clin Immunol. 2018;142(5):1631–1634. 10.  Najafizadeh SR, Ghazizadeh Z, Nargesi AA, et al. Analysis of serum heat shock protein 70 concentration for diagnosis and disease activity monitoring in patients with rheumatoid arthritis Cell Stress  and Chaperones. 2015;20(3):537–543. 11.  Seok H, Jeon HS, Park HJ, et al. Association of HSPA1B SNP rs6457452 with Alopecia Areata in the Korean population. Immunol. Invest. 2013;43(3):452–465. 12.  Rudnicka  L,  Olszewska  M,  Rakowska  A,  Kowalska-Oledzka  E. Atlas  of  Trichoscopy: Dermoscopy in Hair and Scalp Disease. Springer Verlag, 2012; 507 р. 13.  Fuentes-Duculan J, Gulati N, Bonifacio KM, et al. Biomarkers of alopecia areata disease activity and response to corticosteroid treatment. Exp Dermatol. 2016;25(4):282–286. 14.  Bernardo BC, Weeks KL, Patterson NL, McMullen JR. HSP70: therapeutic potential in acute and chronic cardiac disease settings. Future Med. Chem. 2016;8(18):2177–2183. 15.  Nakhjavani M, Morteza A, Khajeali L, et al. Increased serum HSP70 levels are associated with the duration of diabetes. Cell Stress and Chaperones. 2010;15(6):959–964. 16.  Wikramanayake TС, Villasante AС, Mauro LМ, et al. Prevention and treatment of alopecia areata with quercetin in the C3H/HeJ mouse model. Cell Stress and Chaperones. 2012;17:267–274. 17.  Rashighi  M,  Harris  JE.  Vitiligo  pathogenesis  and  emerging  treatment.  Dermatol  Clin. 2017;35(2):257–265. 18.  Rork JF, Rashighi M, Harris JE. Understanding autoimmunity of vitiligo and alopecia areata. Curr Opin Pediatr. 2016;28(4):463–469. 19.  Samborski P, Grzymislawski M. The role of HSP70 in the the Pathogenesis and Treatment of Inflammatory Bowel Diseases. Adv Clin Exp Med. 2014;24(3):525–530. |
| **Publication of the article** | «DERMATOLOGY AND VENEREOLOGY» №3(85), 2019 year,15-18 pages,  index UDK *616.594.15–092:612.017.1–078.33* |
| **DOI** | 10.33743/ 2308-1066-2019-3-15-18 |